APPENDIX A REFERENCES

Section I: Required Publications
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Sample Equipment Rate Worksheet

APPENDIX A

REFERENCES

SECTION I: REQUIRED PUBLICATIONS

Public Law 92-41. *The Renegotiation Act of 1971* [Pub. L. 92-41 (85 Stat. 97)].

Federal Acquisition Regulation 15.400. 2001. *Contract Pricing*, Government Printing Office, Washington, DC.

_____. 30.101. 2003. *Cost Accounting Standards*, Part 30, Government Printing Office, Washington, DC.

_____. 31.105. 2003. *Construction and Architect Engineer Contracts*, Government Printing Office, Washington, DC.

_____. 31.205-10. 2003. *Cost of Money*, Government Printing Office, Washington, DC.

_____. 31.205-24. 2003. *Maintenance and Repair Costs*, Government Printing Office, Washington, DC.

_____. 31.205-36. 2003. *Rental Costs,* Government Printing Office, Washington, DC.

_____. 49.000. 2003. *Termination of Contracts,* Government Printing Office, Washington, DC.

_____. 52.230-2. 1998. *Cost Accounting Standards*, Government Printing Office, Washington, DC.

Engineer Federal Acquisition Regulation Supplement (EFARS). 31.105-100. 2001. *Contract Statement*, Government Printing Office, Washington, DC.

_____. 31.105. 2001. *Construction and Architect-Engineer Contracts*, Regulation Supplement, Government Printing Office, Washington, DC.

Engineer Regulation 1110-2-1302. 1994. *Engineering and Design - Civil Works Cost Engineering*, U.S. Army Corps of Engineers.

U.S. Department of Labor, Bureau of Labor Statistics. *Producer Prices and Price Indexes,* Government Printing Office, Washington, DC.

SECTION II: RELATED PUBLICATIONS

Caterpillar Inc. 1999. *Caterpillar Performance Handbook*, 30th ed, Peoria, Illinois.

_____. 2000. *Caterpillar Performance Handbook*, 31st ed, Peoria, Illinois.

_____. 2001. *Caterpillar Performance Handbook*, 32nd ed, Peoria, Illinois.

Caterpillar Tractor Company, *Fundamentals of Earthmoving*, Peoria, Illinois, 1975.

Energy Information Administration. *Electric Power Monthly*, Washington, DC.

_____. *Petroleum Marketing Monthly*, Washington, DC.

Equipment Watch. 2002. *Green Guide for Off-Highway Trucks and Trailers*, San Jose, California.

_____. 2002. *Green Guide Volume I*, San Jose, California.

_____. 2002. *Green Guide Volume II*, San Jose, California.

_____. 2002. *Contractor's Equipment Cost Guide*.

_____. 2002. *Cost Reference Guide*.

Euclid, Inc. 1981. *Euclid Hauler Handbook*, 14th ed, Cleveland, Ohio.

Fiat-Allis Construction Machinery, Inc. 1983. *Owning and Operating Costs*, Springfield, Illinois.

Goodyear Tire and Rubber Company. 2002. *Bulletin B300*, Akron, Ohio.

International Harvester, Pay Line Division. 1975. *Earthmoving Principles*, Schaumburg, Illinois.

Koehring Company. 1981. *Application Manual for Hydraulic Excavators and Shovels*, 1st ed, Milwaukee, Wisconsin.

Nichols, H L Jr. 1999. *Moving the Earth*, 4th ed, North Castle Books, Greenwich, Connecticut.

R S Means Company, Inc. *Means 2003 Labor Rates for the Construction Industry*, 30th ed., Kingston, Massachusetts.

Terex Corporation. 1981. *Production and Cost Estimating of Material Movement* with Earthmoving Equipment, Hudson, Ohio.

SECTION III: EFAR REFERENCE

EFARS PART 31
CONTRACT COST PRINCIPLE AND PROCEDURES

EAC 95-6

SUBPART 31.1 -- APPLICABILITY

31.105 Construction and Architect-Engineer Contracts.

(d)(2)(i)(b) In this case, equipment ownership and operating costs shall be determined using the Construction Equipment Ownership and Operating Expense Schedule published by the U.S. Army Corps of Engineers.

31.105-100 Contract Clause.

The contracting officer shall insert the statement at 52.231-5000 in all solicitations and contracts for construction within the United States that are expected to exceed the small purchase threshold.

EFARS Clause - 52.231-5000 Equipment Ownership and Operating Expense Schedule.

As prescribed in 31.105-100, insert the following clause in all solicitations and contracts for construction that are expected to exceed the small purchase threshold.

EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (MAR 1995) – EFARS.

(a) This clause does not apply to terminations. See 52.249-5000, *Basis for Settlement of Proposals*, and FAR Part 49, *Termination of Contracts*.

(b) Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a contractor or subcontractor at any tier shall be based on actual cost data for each piece of equipment or groups of similar serial and series for which the Government can determine both ownership and operating costs from the contractor's accounting records. When both ownership and operating costs cannot be determined for any piece of equipment or groups of similar serial or series equipment from the contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP 1110-1-8, *Construction Equipment Ownership and Operating Expense Schedule,* Region *[Insert roman numeral for the appropriate region of the schedule].* Working conditions shall be considered to

SECTION III: EFAR REFERENCE (Continued)

be average for determining equipment rates using the schedule unless specified otherwise by the contracting officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retroactive pricing, the schedule in effect at the time the work was performed shall apply.

(c) Equipment rental costs are allowable, subject to the provisions of FAR 31.105, *Construction and Architect-Engineer Contract,* and FAR 31.205-36, *Rental Costs*. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established practice of leasing the same or similar equipment or unaffiliated lessees.

(d) When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet.

SECTION IV. GOVERNMENT BOOKSTORES

U.S. Government periodicals are sold by the Office of the Superintendent of Documents. Orders may be placed by mail from the following address:

Superintendent of Documents
P.O. Box 371954
Pittsburgh, PA 15250-7954

Orders may be placed by telephone or fax (Visa/Mastercard is accepted). Telephone: 866-512-1800 (D.C. area: 202-512-1800). Fax: 202-512-2250.

Orders may also be placed electronically at Internet address http://bookstore.gpo.gov/.

Regional government bookstores can also be contacted for orders (see the following list).

RETURN POLICY: Publications are not accepted for exchange or credit unless an error was made in filling your order .

When ordering, please give the following information:

Title of Publication:	EP 1110-1-8, Construction Equipment Ownership and Operating Expense Schedule
Region:	Region I through XII
Volume No.	Volume No. 1 through No. 12
Media:	CD-ROM

REGIONAL BOOKSTORES

WASHINGTON:
710 North Capitol St. NW
Washington, DC 20401
202-512-0132

WAREHOUSE SALES OUTLET:
3660 Cherry Lane
Laurel, MD 20707
301-953-7974

ATLANTA:
First Union Plaza
999 Peachtree Street Northeast, Suite 120
Atlanta, GA 30309
404-347-1900

DENVER:	1660 Wynkoop Street, Suite 130 Denver, CO 80202 303-844-3964
DETROIT:	Suite 160, Federal Building 477 Michigan Avenue Detroit, MI 48226 313-226-7816
HOUSTON:	Wells Fargo Center, 801 Travis Street Suite 120 Houston, TX 77002 713-228-1187
JACKSONVILLE:	100 West Bay Street, Suite 100 Jacksonville, FL 32202 904-353-0569
KANSAS CITY:	120 Bannister Mall 5600 East Bannister Road Kansas City, MO 64137 816-765-2256
LOS ANGELES:	ARCO Plaza, Level C 505 South Flower Street Los Angeles, CA 90071-2181 213-239-9844
MILWAUKEE:	Reuss Federal Plaza, Suite 150W 310 West Wisconsin Avenue Milwaukee, WI 53203-2228 414-297-1304
NEW YORK:	Room 2-120, Federal Building 26 Federal Plaza New York, NY 10278 212-264-3825
PITTSBURGH:	Room 118, Federal Building 1000 Liberty Avenue Pittsburgh, PA 15222 412-395-5021
PORTLAND:	1305 Southwest First Avenue Portland, OR 97201-5801 503-221-6217

PUEBLO:	Wells Fargo Building Norwest Banks Building 201 West 8th Street Pueblo, CO 81003 719-544-3142
SEATTLE:	Room 194, Federal Building 915 Second Avenue Seattle, WA 98174 206-553-4270

Use this worksheet to compute rates for equipment that is not in this pamphlet.

1. **EQUIPMENT INFORMATION AND EXPENSE FACTORS**

ID No.: _____

a. Equipment Specification Data:
   (1) Equipment Description: _____
   (2) Model and Series: _____
   (3) Year of Use: _____
   (4) Year Manufactured: _____
   (5) Horsepower - Equipment: _____
   (6) Horsepower - Carrier: _____
   (7) Fuel type: - Equipment: gas/diesel off-road/diesel on-road/electric/air _____
   - Carrier: gas/diesel off-road/diesel on-road/electric/air _____
   (8) Shipping Weight (cwt): _____
   (9) Tire size and number of tires: (Cost of tires based on year of use – see 1.a.(3) and appendix F)

	No.	Size/Ply	Unit Price	Cost
(a) Front (FT):	_____	_____	$_____	$_____
(b) Drive (DT):	_____	_____	$_____	$_____
(c) Trailing (TT):	_____	_____	$_____	$_____
(d) Total Tire Cost:				$_____

USE APPENDIX D TO COMPLETE THE FOLLOWING DATA:

b. Category and Subcategory Number: _____
c. Hourly Expense Calculation Factors:
   (1) Economic Key (EK): _____
   (2) Condition (C): _____ Average or Severe or Difficult
   (3) Discount Code (DC): B = 7.5% (0.075) – or – S = 15.0% (0.15) _____
   (4) Life in Hours (LIFE): _____
   (5) Salvage Value Percentage (SLV): _____
   (6) Fuel Factor – Equipment [Electric (E) Gas (G) Diesel (D)]: _____
   (7) Fuel Factor – Carrier (E G D): _____
   (8) Filters, Oil, and Grease (FOG) Factor (E G D): _____
   (9) Tire Wear Factor:
      (a) Front (FT): _____
      (b) Drive (DT): _____
      (c) Trailing (TT): _____
   (10) Repair Cost Factor (RCF): _____

Equipment Rate Computation Worksheet (copy as needed).

2. **EQUIPMENT VALUE**

a. List Price + Accessories: *[at Year of Manufacture]* =$_____

(1) Discount: (List Price + Accessories) x (Discount Code)
[1.c.(3)]
($_____ + $_____) x (_____) =-($_____

(2) Subtotal [2.a.] – [2.a.(1)] Subtotal=$_____

(3) Sales or Import Tax: (Subtotal) x (Tax Rate)
[2.a.(2)] [Appendix B]
($_____) x (_____) =+$_____

(4) Total Discounted Price: Subtotal: [2.a.(2)] + [2.a.(3)] Subtotal=$_____

b. Freight: (Shipping Weight) x (Freight Rate per cwt)
[1.a.(8)] [Appendix B]
(_____cwt) x ($_____/cwt) =+$_____

c. **TOTAL EQUIPOMENT VALUE (TEV):** **TOTAL[2.]:=$_____**
[(2.a.(4)] + [(2.b)]
(See chapter 3 for used and overage equipment rate adjustments.)

3. **DEPRECIATION PERIOD (N)**

a. (LIFE hours (hr)) / (Working Hours Per Year (WHPY)) = N
[1.c.(4)] [Appendix B]
(_____hr) / (_____hr/yr) =_____

4. **OWNERSHIP COST**

a. Depreciation

(1) Tire Cost Index (TCI):
(Tire Index, Yr of Mfg) / (Tire Index, Based on 1.a.(3)) =Tire Cost Index (TCI)
[Appendix E, EK=100] [Appendix E, EK=100]
(_____) / (_____) =_____(TCI)

(2) [(TEV) x [1.0 - (SLV)] - [(TCI) x (Tire Cost)]] / (LIFE)
[2.c.] [1.c.(5)] [4.a.(1)] [1.a.(9)(d)] [1.c.(4)]

[($_____) x [1.0 – (_____)] – [(_____) x ($_____)]] / (_____hr)

=$_____/hr

Equipment Rate Computation Worksheet (copy as needed).

4. **OWNERSHIP COST (Continued)**

b. Facilities Capital Cost of Money (FCCM):

(1) [[(N) - 1.0] x [1.0 + (SLV)] + 2.0] / [2.0x (N)] = Avg Value Factor
[3.a.] [1.c.5.] [3.a.] (AVF)

[[(_____yr) – 1.0] x [1.0 + (_____)] + 2.0] / [2.0 x (_____yr)]

=_____ (AVF)

(2) (TEV) x (AVF) x (Adjusted Cost - of - Money) / (WHPY)
[2.c] [4.b.(1)] [Appendix B] [Appendix B]

($_____) x (_____) x (_____) / (_____hr/yr)
=$_____ /hr

c. **TOTAL HOURLY OWNERSHIP COST: TOTAL [4.]:** **=$_____** /hr
[4.a.(2)] + [4.b.(2)]

5. **OPERATING COST**

a. Fuel Costs:

(1) Equipment:

(Fuel Factor x (Horsepower (hp)) x (Fuel Cost Per Gallon (gal))
[1.c.(6)] [1.a.(5)] [Appendix B]

(_____) x (_____hp) x ($_____/ gal) =$_____ /hr

(2) Carrier:

(Fuel Factor) x (Horsepower) x (Fuel Cost Per Gallon)
[1.c.(7)] [1.a.(6)] [Appendix B]

(_____) x (_____hp) x ($_____/gal) =$_____/hr

(3) Total Hourly Fuel Cost: **Total [5.a.]** =$_____/hr
[(5.a.(1)] + [5.a.(2)]

b. FOG Cost:

(1) Equipment:

(FOG Factor) x (Equipment Fuel Cost) x (Labor Adjustment Factor (LAF))
[1.c.(8)] [5.a.(1)] [Appendix B]

(_____) x ($_____/hr) x (_____) =$_____/hr

5. **OPERATING COST (Continued)**

(2) Carrier:

(FOG Factor) x (Carrier Fuel Cost) x (LAF)
[1.c.(8)] [5.a.(2) [Appendix B]

(_____) x ($_____/hr) x (_____) =$_____ /hr

(3) Total Hourly FOG Cost: **Total [5.b.]** =$_____ /hr
[(5.b.(1)] + [5.b.(2)]

c. Alternative Fuel/FOG Cost: **Total [5.c.]** =$_____ /hr

(See chapter 2, paragraph 24.d. for guidance on when to use.)

d. Repair Cost:

(1) Economic Adjustment Factor (EAF):
(EK is from [1.c.(1)])

(Economic Index for Year 1.a.(3)) / (Economic Index for Year 1.a.(4))
[Appendix E] [Appendix E]

(_____) / (_____) =_____ (EAF)

(See table 3-1 for last year of economic life.)

(2) Repair Factor (RF):

(RCF) x (EAF) x (LAF) =Repair Factor (RF)
[1.c.(10)] [5.d.(1)] [Appendix B]

(_____) x (_____) x (_____) =_____ (RF)

(3) Repair Cost:

[(TEV) - [(TCI) x (Tire Cost)]] x (RF) / (LIFE)
[2.c.] [4.a.(1)] [1.a.(9)(d)] [5.d.(2)] [1.c.(4)]

[($_____) – [(_____) x ($_____)]] x (_____) / (_____)

(4) Total Hourly Repair Cost: **Total [5.d.]** =$_____ /hr

5. **OPERATING COST (Continued)**

e. Tire Wear Cost: (Use current price levels. See Appendix F)

(1) Front Tires (FT):

[1.5 x (FT Cost)] / [1.8 x (FT Wear Factor) x (Maximum Tire Life Hours)]
[1.a.(9)(a)] [1.c.(9)(a)] [Appendix G]

[1.5 x ($_____)] / [1.8 x (_____) x (_____/hr)]

=$_____ /hr

(2) Drive Tires (DT):

[1.5 x (DT Cost)] / [1.8 x (DT Wear Factor) x (Maximum Tire Life Hours)]
[1.a.(9)(b)] [1.c.(9)(b)] [Appendix G]

[1.5 x ($_____)] / [1.8 x (_____) x (_____/hr)]

=$_____ /hr

(3) Trailing Tires (TT):

[1.5 x (TT Cost)] / [1.8 x (TT Wear Factor) x (Maximum Tire Life Hours)]
[1.a.(9)(c)] [1.c.(9)(c)] [Appendix G]

[1.5 x ($_____)] / [1.8 x (_____) x (_____/hr)]

=$_____ /hr

(4) Total Tire Wear Cost: **Total [5.e.]** =$_____ /hr
[Sum 5.e.(1) through 5.e.(3)]

f. Tire Repair Cost:

(Total Tire Wear Cost) x 0.15 x (LAF)
[5.e.(4)] [Appendix B]

($_____/hr) x 0.15 x (_____) **Total [5.f.]** =$_____ /hr

g. **TOTAL HOURLY OPERATING COST:** **TOTAL [5.] =$_____ /hr**
[Sum 5.a. through 5.f.]

6. **HOURLY RATES**

a. Total Hourly Rate: [*based on 40 hours per week (wk)*]

(Ownership Cost) + (Operating Cost)

($_____/hr) + ($_____/hr) =$_____ /hr

b. Other Work Shifts Hourly Rate:
(Refer to Chapter 3, Adjustments to Rates, for methodology.)

[(Depreciation) + [(FCCM) x (40 hr/wk) / (Work hr/wk)] + (Operating Cost)]
[4.a.(2)] [4.b.(2)] (example: 60 hr/wk) [5.g.]

[($_____/hr) + [($_____/hr) x (40 hr/wk) / (_____hr/wk)] + ($_____/hr)]

=$_____ /hr

c. Standby Hourly Rate:

[(Depreciation) x 0.50] + (FCCM)
[4.a.(2)] [4.b.(2)]

[($_____/hr) x 0.50] + ($_____/hr) =$_____ /hr)

See Chapter 3 if rate adjustments are necessary.

Equipment Rate Computation Worksheet (copy as needed).